NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE GENERAL SPECIFICATIONS

POND (EMBANKMENT)

(No.)

CODE 378

1. SCOPE

The work shall consist of all construction operations and furnishing all materials as required by the drawings and specifications for the installation of the works. All work shall be conducted in a skilled and workmanlike manner. The completed job shall present a workmanlike appearance. Construction operations shall be carried out so that erosion and air and water pollution are minimized and held within legal limits. Appropriate safety measures, such as warning signs, rescue facilities, and fencing shall be provided as needed.

2. LOCATION

The location of the embankment, borrow area, emergency spillway, and appurtenant structures shall be as specified on the drawings or as staked in the field.

3. PUBLIC AND PRIVATE UTILITIES

Utilities are defined to be overhead and/or underground power-lines, communication lines, and pipelines. All utilities discovered to be in the work area are shown on the drawings or sketches. However, the absence of indicators on the drawings or sketches does not assure the nonexistence of utilities in the work area. *The contractor is alerted to conduct his own search and discovery for utilities in order to lessen or avoid potential damages.* The owner/operator shall complete TX-ENG-80, UTILITIES INVENTORY prior to layout or any ground disturbance and return it to an NRCS representative.

4. MATERIALS

Materials required for the pipe conduit and appurtenances shall be as specified on the drawings or in the Construction Details section of this specification.

5. CONTROL OF WATER

Control or removal of surface or ground water shall be performed as needed to complete the required construction in accordance with the specifications and drawings. The f*oundation area shall be kept free of standing water during fill placement.* The cutoff trench shall be kept free of water during backfilling.

6. FOUNDATION PREPARATION

The foundation area shall be cleared of trees, logs, stumps, roots, brush, boulders, sod, and rubbish, and shall be stripped to sufficient depth to remove all objectionable material. If needed to establish vegetation, the topsoil and sod shall be stockpiled and spread on the completed dam and spillways. Foundation surfaces shall be sloped no steeper than 1:1. The foundation area shall be thoroughly scarified before placement of the fill

material. The surface shall have moisture added or it shall be compacted if necessary so that the first layer of fill material can be compacted and bonded to the foundation.

The cutoff trench *and any other required excavation* shall be excavated to the lines and grades shown on the drawings or as staked in the field and shall be backfilled with suitable material in the same manner as specified for the earth embankment. *Suitable excavated materials may be used in the permanent embankment fill*.

Existing stream channels in the foundation area shall be sloped no steeper than a ratio of one horizontal to one vertical. They shall be deepened and widened as necessary to remove all stones, gravel, sand, stumps, roots, and other objectionable material, and to accommodate compaction equipment.

7. PIPE CONDUIT INSTALLATION (WHEN SPECIFIED)

The pipe conduit barrel shall be placed on a firm foundation to the lines and grades shown on the drawings or as staked in the field. *Anti-seep collars shall be of materials compatible with the pipe and shall be installed so that they are watertight. The pipe shall be installed according to the manufacturer's instructions. The pipe shall be firmly and uniformly bedded throughout its length and shall be installed to the line and grade shown on the drawings*. Select backfill shall be placed around the conduit in layers not more than 4 inches thick before compaction, and each layer shall be thoroughly compacted to the density of the surrounding material by hand tamping, or by using manually directed power tampers or plate vibrators. A minimum of one foot of fill shall be placed over the top of the pipe before construction equipment is allowed to pass. Anti-seep collars, anti vortex devices, trickle tubes, and other appurtenances shall be installed as shown on the drawings or as specified in the Construction Detail.

8. EMERGENCY SPILLWAY EXCAVATION

The completed emergency spillway shall conform to the lines, grades, bottom width, and side slopes specified on the drawings or as staked in the field.

9. BORROW EXCAVATION

All borrow areas outside the pool area shall be graded and left in such a manner that they are well drained. The location, extent, and depth of borrow pits will be designated in the Construction Details *or staked in the field*. Borrow pits shall be excavated and dressed in a manner to eliminate steep or unstable slopes or other hazardous conditions.

10. PLACEMENT OF EARTHFILL

Earthfill shall not be placed until the required excavations, bank sloping, and site preparation have been completed, inspected, and approved by the Natural Resources Conservation Service personnel.

The earthfill shall be constructed to the dimensions specified on the drawings or as staked in the field. The materials placed in the fill shall be free of all sod, roots, frozen soil, stones, *or* other matter which will interfere with the performance of the earthfill material. *The maximum uncompacted layer thickness shall be nine inches and* the maximum particle size shall not exceed six inches.

The placing and spreading of fill material shall be started at the lowest point of the foundation and the fill brought up in approximately horizontal layers of such thickness that the required compaction can be obtained with the equipment used. *The fill shall be constructed in continuous horizontal layers except where openings or sectionalized fills are required. In those cases, the slope of the bonding surfaced between the embankment in place and the embankment to be placed shall not be steeper than 3 horizontal to 1 vertical. The bonding surface shall be treated the same as that specified for the foundation so as to insure a good bond with the new fill.*

The distribution and gradation of materials throughout the fill shall be such that there will be no lenses, pockets, streaks, or layers of material differing substantially in texture and gradation from the surrounding material.

Where it is necessary to use materials of varying texture and gradation, the more impervious material shall be placed in the center and upstream parts of the fill. *If zoned fills of substantially differing materials are specified, the zones shall be placed according to lines and grades shown on the drawings.*

Drainfill shall be kept from being contaminated by adjacent fill during placement by either placing it in a cleanly excavated trench or by keeping the drain at least 1 ft. above the adjacent earthfill.

Selected drainfill and backfill material shall be placed around structures, pipe conduits, and antiseep collars, as about the same rate on all sides to prevent damage from unequal loading.

11. FOUNDATION AND EMBANKMENT DRAINS

Foundation and embankment drains, if required, shall be placed to the line and grade shown on the drawing. Detailed requirements for drain material and any required pipe shall be shown on the drawings and/or specified in Construction Details.

12. MOISTURE CONTROL

The moisture content of the fill material shall be adequate for obtaining the desired compaction. Material that is too wet shall be dried to meet this requirement, or be removed. Material that is too dry shall have water added *and mixed with the* fill material as needed to comply with the above requirement.

Unless otherwise specified, the in place moisture content of the fill material shall *be at or above the plastic limit(12% –18% by weight) as determined by the feel method, speedy moisture tester, or other appropriate methods.*

13. COMPACTION

Construction equipment shall be operated over each layer of fill to insure that the required compaction is obtained. Special equipment shall be used if needed to obtain the required compaction. If a minimum required density is specified, each layer of fill shall be compacted as necessary to obtain that density.

Unless other wise specified in Construction Details, compaction of fill (other than adjacent to the pipe conduit) shall be by one of the following methods:

(1) Controlled operation of the earthmoving and spreading equipment over the fill so that the entire surface of each layer or lift is traversed by not less than one tread track of the equipment.

(2) Compaction of each lift by not less than two (2) complete passes of a roller weighing not less than one thousand (1000) pounds per foot of roller width.

(3) Other equivalent methods approved by the Engineer.

Select backfill shall be placed around the conduit (when applicable) in layers not more than 4 inches thick before compaction, and each layer shall be thoroughly compacted to the density of the surrounding material by hand tamping, or by using manually directed power tampers or plate vibrators.

Fill adjacent to concrete structures shall not be compacted until the concrete has had time to gain enough strength to support the load.

14. MEASUREMENT

Excavation. Unless otherwise specified, measurement for excavation will not be made.

Earthfill. Unless otherwise specified, the volume of earthfill will be determined from design dimensions as shown on the drawings and as staked in the field.

Unless otherwise specified, the design dimensions shall be defined as follows. The lower limit shall be the original ground surface as it existed prior to the start of construction and the upper limit shall be the specified neat lines of the settled fill surface.

Volume of earthfill will be computed to the nearest cubic yard. No reduction will be made for embedded conduits and appurtenances.

Pipe Conduit. Unless otherwise specified, measurement of pipe conduit installed will not be made.

15. CONSTRUCTION DETAIL

The following listed drawings are attached and are a part of these construction specifications. (Include other applicable items - mark out and initial items listed and not applicable.)

a. TX-ENG-48 - Construction Data for Pond Dam

b. TX-283 - Fabrication Details and Bill of Materials for Standard Corrugated Metal Pipe Drop Inlet Structure

c. 4-L-23347-2 - Base for Corrugated Metal Vertical Inlet

d. 4-L-23347-1 - Guard Rails with Anti-Vortex Plate for Corrugated Metal Vertical Inlet